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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/676,303

09/30/2003

Sujit Sharan

42P16837

8178

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7590

02/02/2006

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EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 02/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/676,303	Applicant(s) SHARAN ET AL.	
	Examiner James M. Mitchell	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to applicant's request for continued examination filed October 28, 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 9-12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al. (U.S. 2003/0013233) in combination with Manor (U.S. 2002/0031899) in combination with Gupta et al. (U.S. 2004/0014253).

Shibata (Fig 1e-f) discloses:

(cl. 1, 9, 14) a method of forming a chemically soluble coating (3;"chemical process"; Par, 0015) on a plurality of exposed contacts (2) on a surface of a circuit substrate (1) to a thickness greater than a distance of a surface protrusion of a portion of a plurality of contacts (2), and removing portions of the coating (Fig. 1(d)-1(d);"chemical process"; Par, 0015);

(cl. 2) wherein each portion of plurality of contact comprises protruding bumps (2);

(also cl. 3, 5,10) "sawing" along scribe/street to form individual die (Par.0037);

(cl. 4, 7, 11,12, 14 15) and the removing and sawing is done simultaneously (i.e. sawing removes material in its path) removing entire coating in street/scribe region;

(cl. 6, 7) wherein removing exposes plurality of contacts (Fig 1e) by removing an entire portion of coating above contact and thereby exposing it;

Shibata further discloses removing by chemical etch (Par, 0015) and scribe lines (Par. 0028), but does not disclose that its etch results in dissolution or that scribing the surface of the substrate along scribe areas.

Gupta teaches and that chemical etches results in dissolution (Par. 0065; step h, Fig. 1).

It would have been obvious to one of ordinary skill in the art that the chemical etch of Shibata results in dissolution in order to remove the material as taught by Gupta (Par. 0015).

Neither Shibata nor Gupta appear to show scribing the surface of the substrate along scribe areas.

However, Manor utilizes a scribing method by forming scribe lines with laser (Fig 2, sep 205) along a scribe area.

It would have been obvious to one of ordinary skill in the art to incorporate scribing as taught by Manor into the surface of the modified structure of Shibata, in order to form scribe lines/street as required by Shibata (Par. 0028, 0034).

With respect to claim 3, Shibata discloses the thickness of its coating, but does not appear to explicitly disclose the thickness between 5 to 35 microns. In any event, the thickness would have been obvious since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical.

See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Claims 8, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al. (U.S. 2003/0013233), Gupta et al. (U.S. 2004/0014253) and Manor (U.S. 2002/0031899) as applied to claim 1, 9 and 15 and further in combination with FUJI (JP2000630747).

Neither Shibata, Gupta nor Manor appears to show the coating as a resin flux, but Fuji teaches the use of an epoxy flux coating (See Abstract).

It would have been obvious to one of ordinary skill in the art to form the coating coating/sealing/ underfill of Shibata with an epoxy flux in order provide reliable adhesion between its component and substrate as taught by Fuji (English Abstract).

Response to Arguments

Applicant's arguments filed have been fully considered but they are not persuasive. Applicant correctly argues that Shibata does not show scribing through its substrate, and that Shibata shows cut groove formed through resin, but incorrectly concludes therefore no motivation to scribe through Shibata's substrate. Shibata explicitly discloses scribe lines (Par. 0028) in its substrate, it was merely silent as to how the line was formed, in which Manor teaches etching to form scribe lines. As

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shown in Shibata (1a-c), a wafer is cut along its scribe lines (e.g. indicated by Arrow "A"); therefore the cut is formed after the formation of the scribe line. As such, use of a cut groove along scribe lines does fails to establish evidence of lack of motivation, where a scribe line is expressly needed prior to the cut. For the reasons indicated, applicant's arguments are found unpersuasive.

As for applicant's argument that Shibata does not show sawing and removing coating simultaneously, examiner disagrees. The use of a saw to cut through the coating likewise removes the material where it is being cut, therefore the use of a saw cutting through an encapsulated wafer, is within the broad scope of applicant's claim. Examiner's is unpersuaded by applicant's arguments.

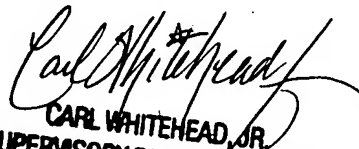
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
January 12, 2006


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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